Writing Linear Equations using Slope-Intercept Form

$$y = mx + b$$

y-intercept = where the line crosses the y-axis

$$m = \text{slope} = \frac{y - y}{x - x} = \frac{\text{rise}}{\text{run}}$$

To find slope, take the difference between two points on the graph or count the rise over run.

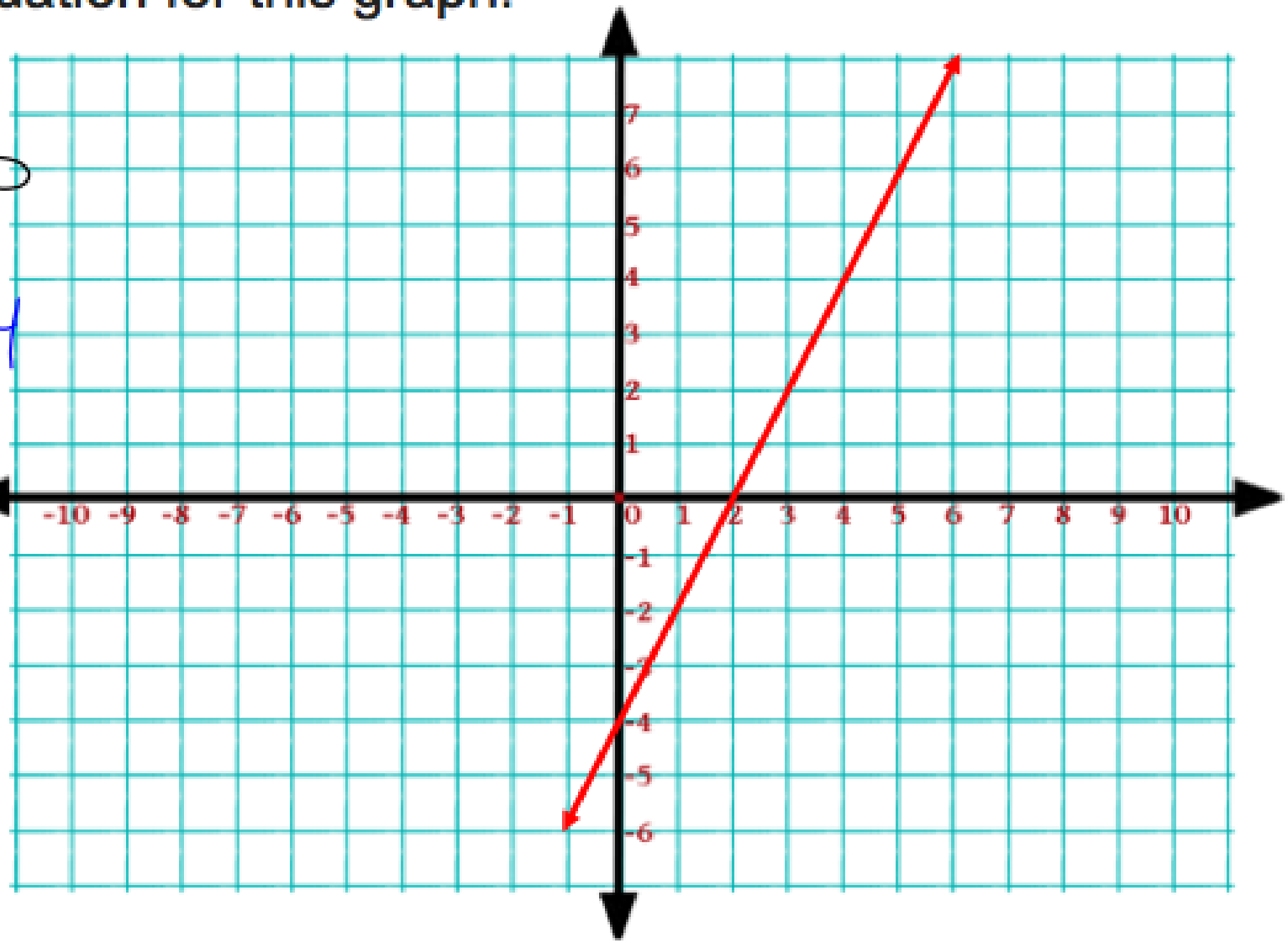
Write the equation for this graph.

$y = mx + b$

$y = 2x + -4$

$y = \frac{2}{1}x + -4$

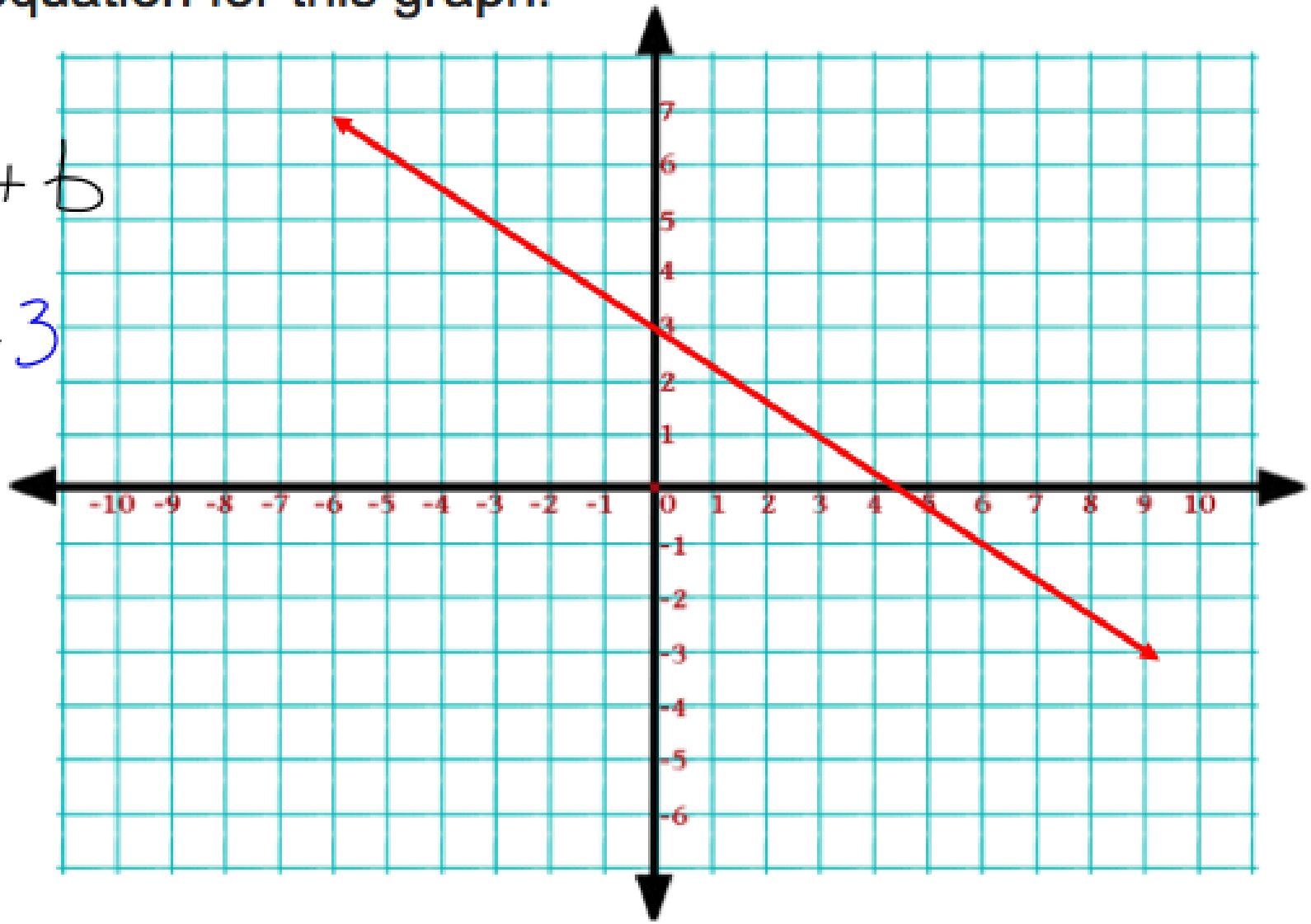
$y = \frac{2}{1}x - 4$



Write the equation for this graph.

$y = mx + b$

$y = -\frac{2}{3}x + 3$

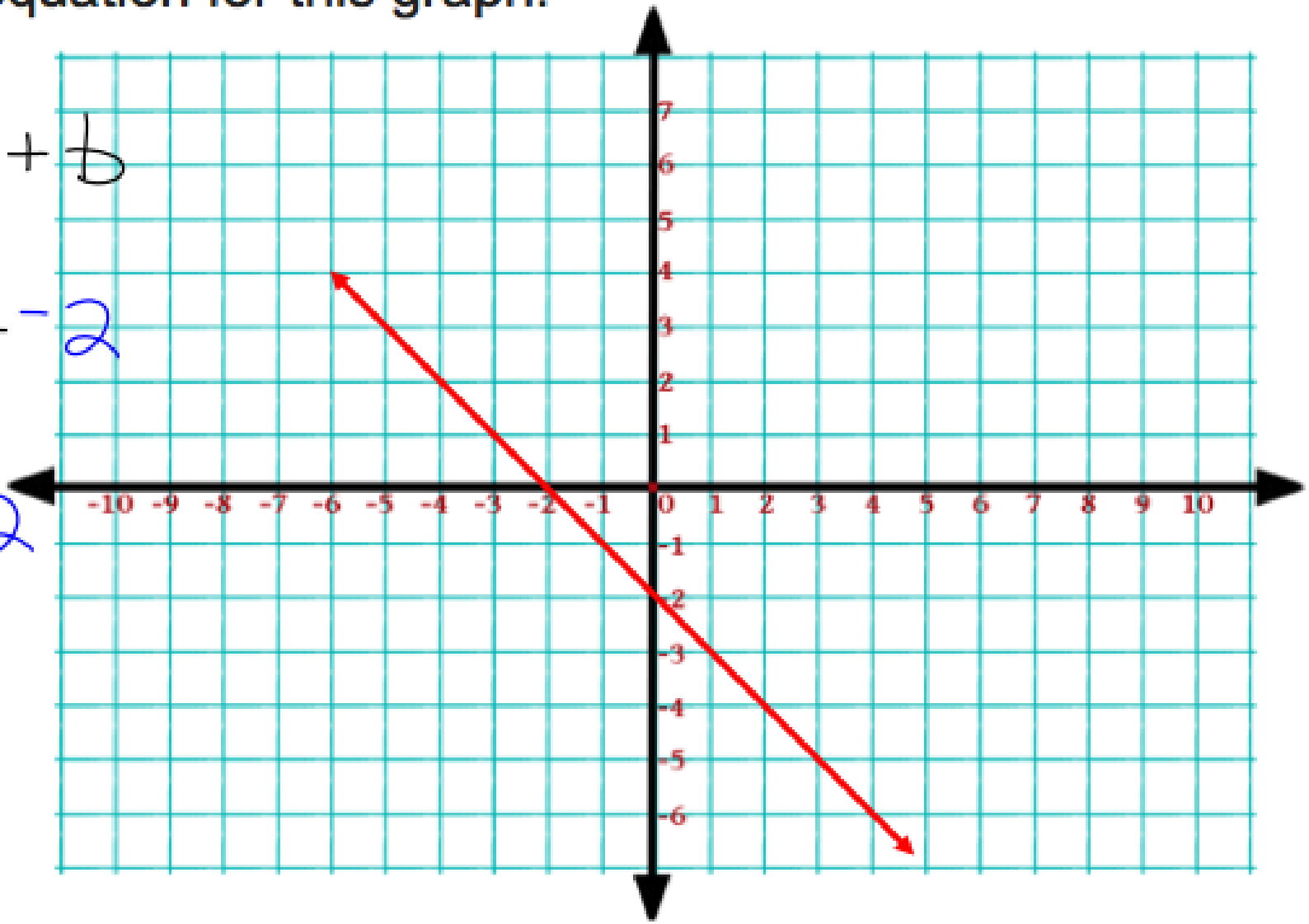


Write the equation for this graph.

$y = mx + b$

$y = -1x + -2$

$y = -x - 2$



When writing an equation to fit a real-life situation, it is best to define the variables, *x* and *y*, first. Then remembering that slope (m) represents change and the y-intercept (b) is the starting point, you can input those values into $y = mx + b$

Write an equation that models this sitution.

You have a summer job painting fences. Your next paint job is a 650 square foot fence. You estimate that you can paint 30 square feet per hour. Write an equation that shows how much fence is left to paint after so many hours have gone past.

Let x = the number of hours

Let y = amount of fence left to paint

slope = square feet / per hour

$$y = mx + b$$

$$y = 650 - 30x \quad \text{or} \quad y = -30x + 650$$

Write an equation that models this sitution and predict the panfish population is 2020.

The number of panfish in Lake Geneva was estimated at 44.5 thousand in 2005. During the next 20 years, the panfish population is expected to increase by about 3.2 thousand fish per year.

Let x = number of years since 2005
Let y = fish population in the thousands

$$y = 3.2x + 44.5$$

$$y = 3.2(15) + 44.5$$

$$y = 92.5 \text{ thousand fish}$$